

WEB REDESIGN PROJECT OVERVIEW

ANALYSIS

Project Justification

As a gateway to physical and electronic scholarly information resources, the University of Hawai'i at Mānoa Library website is intended to reflect the dynamic growth and change in the way information is produced and disseminated, in the way we use information, and in the way that we interact with our public. The mission of the website, as determined by the Library Web Redesign Committee, is to assist faculty, staff, and community to connect to the Library resources and services they need in their research and teaching endeavors. Regard is given to a number of important factors: the Library's geographic location; its unique collections; and its standing locally, internationally, and in the Association of Research Library rankings.

Raganathan's fundamental laws are behind the guiding principles of the website redesign and include the following:

- Continuous experimentation for improved usability
- Save the time of the user - transparency
- Enable self-sufficiency
- Educate users to the richness, diversity and uniqueness of UH Mānoa library resources

In a 2003 LibQual survey of 255 UH Manoa faculty, graduate students, undergraduate students and staff, the library was deemed wanting in access to information and in a sense of personal control. Undergraduates wanted easy-to-use access tools that would allow them to find things on their own, graduate students wanted convenient access to library collections, and faculty wanted electronic resources accessible from their homes or offices. Graduate students were the most disaffected population in the survey results, and focus groups with graduate students were conducted in the fall of 2003 to gather additional information from this group.

At the same time, there was a general sense of the library website needing redesign from within the library. The current website is a collection of independently designed departmental websites hosted by different servers, and accessible under an umbrella site offering general library information, resources and services. The umbrella site was created in 2000 by an LIS intern working with the head of the library's DNS department

and replaced the library's original website, which had been created by a library faculty member in 1996. In the spring of 2004 Town Hall Meetings were held for library faculty and staff in order to come together and provide input on what they collectively thought the library's website needed to improve, change and maintain. This input indicated that the redesign should focus on the organization of content and on the website's look and feel. At the same time, library staff members were interested in exploring more efficient and uniform ways to create and update subject content within an overall design framework.

The general consensus from both the LibQual II survey and Town Hall meetings was that library users were not able to easily locate information about the library's collections, services, and growing electronic resources. A general perception of the current website by a group of stakeholders in the project indicated that it is either regarded rather neutrally or that it is not a site where you can easily find your way around. This same group reported that they would like to see a site that is fresh, updated, and not only helpful but trustworthy as well.

Background

In the fall of 2003, the Assistant University Librarian convened a large group of people from both within and without the Library to look at the website. The group was charged with creating functional specifications for a new web system that could be used by all library departments. The mission was to collect and analyze the needs of users (faculty, students, and staff) as well as individuals working within the library, to review and benchmark websites that achieve this vision, to develop a system architecture for a new web-based information system for the Library based upon these inputs, to present the proposed architecture at a Town Hall Meeting of interested parties, and to modify the approach based upon relevant input. Once a plan had been developed for the next generation library web system, an implementation team would be put into place to develop the site. Usability testing was to be a part of the implementation team's mission.

In February 2004, a small working group from the larger committee was formed to explore possible options for the architectural software for a new library website. The group was asked to prepare a list of requirements for web software, including the following:

- 1) Cost of less than \$15,000 (one-time)
- 2) Ability to seamlessly interact with databases and present search results within web context
- 3) Ability to create templates for library departments to add content without HTML markup or programming
- 4) Ease of refreshing web graphics and content
- 5) Ability to define common design elements as an index-driven function (e.g., to

- call up a common graphics file to brand each page)
- 6) Ability to automate the input, display of Voyager reports (e.g., new book reports) and to create templates wherein the user interacts with those reports (e.g., submits requests)

A great deal of time was spent in researching software products and in conducting conference calls to professionals using various content management systems and software packages. It was later recommended that the larger Web Redesign Committee seriously consider purchasing Cold Fusion and further researching the Zope/Plone approach to content management.

At the same time, the AUL, working with the Library Development office, began to explore the graphics options. Starr Siegel, a communications advertising agency in Honolulu, was asked to meet with a small group in June. After a number of meetings and review of the designs from this agency, it was decided to explore other design options.

In March 2004 a User Needs Sub-committee convened to solicit user needs. The April 2004, Town Hall Meetings were organized and conducted by this sub-committee. The attendees were asked to consider what the library website should provide to users in terms of content, functionality, appearance. In addition, ideas for possible tools the website content creators (or potential content creators) would need and/or would like to have to make the website as useful as possible to patrons (software, use statistics, cgi scripts, templates, etc) were solicited. A facilitator led two one-hour sessions, which consisted of an overview of the Website renovation project, brainstorming ideas, and prioritizing those ideas through voting. A summary of the results from these meetings can be found at http://libweb.hawaii.edu/intranet/town_hall_meeting.html.

In May of 2004 an online survey of library web users was conducted. The survey can be found at

<http://libweb.calendar.hawaii.edu:3128/surveyor/survey.asp?s=01043070122195>.

Feedback indicated that users went to the library's website primarily for the following reasons: to find basic library information (e.g. hours); to identify and locate library resources by using the catalog Hawaii Voyager; to access electronic indexes and journals; and to find information on resources on specific subjects.

In June, a smaller group, the Library Web Redesign Committee, was convened by the AUL to fast track the project. The committee was comprised of librarians and staff from public services departments and the library's Desktop Network Services and Systems departments. The goals of this committee were to

- 1) Design a new website for the UH Mānoa Library
- 2) Design a strategy to allow several options for departments to develop their own websites, with a minimum of restrictions

- 3) Designate the standards that will apply to all UHM Library websites

The Work Plan was outlined as follows:

- 1) Review available user input (brainstorming, surveys, LibQual)
- 2) Map out current website
- 3) Conceptualize what we want to do and for whom
- 4) Re-organize, re-design, plan for added functionalities
- 5) Work with DNS, others, to implement

Based on the data collected up to that point, the group accomplished a number of tasks during the summer of 2004. Consultations were held with UH ITS representatives, UHM distance learning representatives, and a graphic artist. The group outlined a proposed mission, as well as goals and objectives of the Library website redesign project. (See [Redesign of the Library Website](#).) They also completed a comparative analysis of other academic library websites (see [Web Sites we Like and Why](#)), explored alternative graphics options, created a document outlining patron groups and common tasks, and put together a number of initial mock-up drafts for top level pages.

In September 2004, open meetings on the redesign of the Library's website were held. The focus of the meetings was to share the ideas on changes to the website organization and management. In the meetings the Library Web Redesign Committee discussed plans for the new website and showed mock-ups of how the site would function. This review dealt with functionality only; issues of style were to be covered in a later meeting. The goal of these meetings was to encourage input on functionality and approach before the details of the site were developed. Feedback was also sought in regards to the proposed mission, goals and objectives of the Library Web Redesign Committee.

In October, 2004, the Library Web Redesign Committee met and reviewed the summary of input for the September Open Meetings. A small group from the committee had previously begun to discuss the development and implementation of usability testing of web design concepts, and this plan was shared with the entire committee. The sub-committee responsible for reviewing and recommending software and hardware had purchased an online course on ColdFusion and were also looking for an on-island trainer. This sub-committee had posted a summary report on ColdFusion. (See Technology Section below.) Another member of the committee was exploring an additional bidder for the graphics design. One member was working with an ICS graduate class on Information Architecture and shared the results of a cognitive walkthrough process of the library's existing homepage. (See [Homepage Comments](#).) Finally, at the same time several members of the team were exploring an Intranet design and deliverables.

At the end of October 2004, a natural disaster halted the work of the Library Web Redesign Committee. It was not until June of 2005 that the work of this group resumed. At that time the Chair of the committee suggested that the committee begin its work by launching an effort to develop a Library intranet and by creating a rapid timeline for developing both the intranet and the public Internet pages. The committee strongly suggested usability testing before the first launch of the public web, so one of the first action points was the formation of a subcommittee responsible for conducting usability testing with user information that had been gathered thus far.

By July the committee selected a graphic designer who would design the logo for the new site, and by August the second round of usability testing had been completed. (See [Usability Test Plan](#).)

After interviewing two graphic designers in the summer of 2005, the group selected a designer who worked in the Desktop Network Services department. The committee set out the following guidelines for the website logo for the designer. The logo was to be scalable, inclusive of both Sinclair and Hamilton libraries, have a Hawaiian theme, stylized, and include the words “University of Hawai‘i at Mānoa Libraries.” With that in mind, several designs were created and presented to the committee. The committee selected two final logos to be presented to the library staff and faculty. A library-wide presentation was held in December, and feedback was solicited in the form of a survey, which was distributed at the presentation as well as posted online. The results of the survey showed that the library staff and faculty preferred the logo “Exploring Knowledge” over “The Wind & Rain” logo by a margin of approximately 2:1 (when comparing the number of positive vs. negative comments). When compared on a scale from 1 to 5, with 5 being strongly agree, they preferred the “Exploring Knowledge” logo by 3.5/5.0 compared to 2.0/5.0 for “The Wind & Rain.” The number one critique of “The Wind & Rain” was that it tied too closely to the flood of October 2004. (See [Logo Presentation](#).)

Project Definition

The University of Hawaii at Manoa Library

The University of Hawai‘i at Mānoa’s academic programs and research take special advantage of Hawai‘i’s unique location, natural environment, and rich cultural setting. The University of Hawai‘i at Mānoa Libraries provide information resources and services to support and enhance all University programs, particularly those identified as areas of excellence. Library professionals select, acquire, organize, preserve, and provide intellectual and physical access to collections in a wide range of formats including print, video, audio, and electronic. The University of Hawai‘i at Mānoa Libraries’ primary mission is to serve the students, faculty, and staff of the Mānoa campus. The Library also serves as a resource to the entire University system and to all of the residents of the state. The Library supports national and international research through scholarly use of its

preeminent and unique materials concerning Hawai'i and the rest of the Pacific region and through its efforts to provide both web access to digitized versions of these materials and online access to a rich offering of resources.

Stakeholder/Users

The stakeholders are the Library staff, and they are represented by the Web Redesign Committee. This committee works with the Assistant University Librarian, Head of IT who makes resource decisions for the Web Redesign Committee. The committee's responsibility is to review functional and technical issues, provide guidance in the development of the project, and make recommendations to the Head of IT and the University Librarian.

The following potential stakeholders were discussed:

- change leaders
- gatekeepers
- blockers

Users were identified as falling into four main groups:

- students
- faculty
- community
- library staff

From the earlier comparative analysis of similar academic library websites, the committee extracted a list of desirable features, as well as elements to avoid. The group reviewed additional tools that could help further define and refine the project.

The scope of the initial iteration of the website redesign project was limited to the top-level pages; departmental pages will be targeted for the next phase of the redesign process. After the flood, development of the intranet gained in importance, and became a priority in the web redesign project.

Yet to be determined are possible limitations of the content management system, potential means to identify quantitative and qualitative measures for assessing the success of the project. Project planning tasks also need to be identified and time lined.

Constraints to the project include possible limitations of the content management system, limited trained personnel, and possible policy issues. The library has already purchased hardware/software in support of the project and has added a graphic designer to the redesign team.

Budgeted Resources

As of January 2006, after the purchase of Cold Fusion software and Macromedia Training Subscription, \$5000. remains earmarked for technical training. Other resources include staff time in the form of six librarians, three technical staff, and the AUL.

Because of the nature of the academic year and staff time, specific phases of the project can be planned for certain times of the year to leverage slower periods of activity during the academic calendar.

Technology

Web hardware and software capabilities

Web server

The web server will run on a Linux platform with Apache 2 as the basic web server. Zope, Coldfusion, and php will provide a variety of content management and application services for library staff to develop web pages. Staff will be able to continue to use the familiar ssh client for secure remote access and uploading of files. 20GB of space will be available for use directly on the web server with 180GB additional space available on the data server.

Hardware specifications

Dell PowerEdge 1750
Dual Intel Xeon 2.8Ghz.
2 GB ram
2-36GB 10K rpm SCSI U320 in RAID 0
configuration (35GB total usable)

Software

Red Hat Linux ES 3.0
Apache 2
ColdFusion MX 6.1 Enterprise Edition
Zope CMS
Php4
openssh

Database/data server

<i>The database/data server will run on a Windows 2000 platform and provide database access through Microsoft SQL 2000 and MySQL.</i>	
<i>Hardware specifications</i> Dell PowerEdge 2650 Dual Intel Xeon 3.0Ghz. 3 GB ram 4-72GB 10K rpm SCSI U320 in RAID 5 configuration (200GB total usable)	<i>Software</i> Windows 2000 server MS SQL 2000 MySQL v3

Database compatibility with ColdFusion on Linux

ColdFusion is built on J2EE and supports access for a variety of databases through Java Database Connectivity (JDBC). JDBC is an application program interface (API) specification for connecting programs written in Java to the data in popular databases. It is used much like Open Database Connectivity (ODBC) in Windows to allow a uniform middle layer for both application and database providers to target in a platform independent manner.

ColdFusion support for databases through JDBC breaks down into two general categories

Native support (built-in to ColdFusion):

MS Access 97, 98, 2000, 2003

MySQL

MSSQL 7, 2000

DB2

Informix >=11.5

Oracle 8i R2-R3

Oracle 9i R1-R2

Sybase 12.0 and 12.5

Others:

Support through JDBC for interface with ColdFusion, but needs a third party driver to provide bridge from database to JDBC. JDBC driver could be packaged with database product, but may require a separate purchase.

Zope/Content Management Framework/Plone Content Management System

This content management system meets the following technical requirements:

- XHTML compliant
- WAI compliant
- Table-less CSS layouts
- Indexing and search engine
- XML Metadata support
- Site map generator
- Ability to index meta-tags
- Support for streaming data
- Dynamic contextual page generation
- Works in a linux/apache server environment
- SSL connection through apache
- Sends mail through smtp
- Works with LDAP
- Supports a variety of common office applications and rich media

It is planned that portions of the public internet and most of the intranet will be migrated to the Plone content management system. The transition may have to be manual, as page layouts differ from page to page and the process of separating content from design may be best with human intervention.

In future development projects links can be created from both within and outside of the content management system to activate web applications supported by Coldfusion which will access data from Voyager for the purposes of querying and report generation. The use of a Google search appliance will hopefully help make the different systems appear as one.

Disaster recovery plan

In the event of a server drive failure, both web and database servers are protected by each server's RAID array to ensure uninterrupted operation while up to one of the drives in each of the servers awaits replacement. Data is further protected on a long-term basis through weekly DLT tape backups performed by DNS.

Current Web Statistics

These statistics, compiled by the Head of the Desktop Networking Services, provide a very broad view of usage. Additional data is available. Data includes times when people are updating HTML documents or even when the public workstations are rebooted and automatically access the home page.

October, 2005 stats, the **libweb** server:

average successful requests for pages per day: 22,954.
distinct hosts served that month: 37,899.
data transferred per day: 1.04 GB.
domain usage that month: top 3: 28% .com, 25% edu, 18% .net.
pages served from "Hamilton Library" (uhmllib) that month: 84,470 * (More specific info available if needed.)
pages served from "Trust Territories" that month: 121,102 *
pages served from staff only areas that month: 19,938 *
Pages served from uhunix (www.hawaii.edu) cannot be tracked.

*The number may include access by people working on those sites. Statistics are also available for the annexation, Rapanui, Hawaiian language, Angus Botanical Collections, and prdla sites.

Per Nov 2005 stats, **proxy** server:

page requests for month: 85,335

Current statistics can be accessed by linking to the Web Server Statistics page at http://libweb.hawaii.edu/intranet/weblog/index_servers.html .

Deliverables for Analysis Stage

At the end of the analysis stage, the following documents will have been compiled:

- A Project Overview
- Prioritized list of user needs

Yet to be determined is how deliverables will be reviewed and approved.

User Needs/Studies

Users

Following, are all of the population groups identified by the committee as possible users with unique sets of needs:

Student: post-doctoral, doctoral, masters, upper-level undergraduates, lower-level undergraduates, distance learners, non-traditional

Faculty: regular, adjunct, emeritus, retired, visiting (another university or another UH campus)

Staff: UH Manoa librarians, UH Manoa library staff, UH administrators, UH staff, Board of Regents

Community: UH system faculty and staff, UH system students, other college students, corporate, professionals, alumni, donors/friends, teachers, students K-12, retirees, state workers, people who like to visit libraries, genealogists, other librarians/researchers, prospective employees, people with community user cards, archive users, centennial users, visiting scholars.

User profiles and related tasks, also, have yet to be developed and prioritized.

Testing

User needs have been gathered through the Town Hall Meetings, online surveys, focus groups and Open Meeting, as well as formal and informal usability testing throughout the redesign process. (See User Needs.)

In the Spring of 2005, a sub-committee completed a card-sorting exercise. The team asked 9 participants, including undergraduates, graduate students and community users, to sort the terms we planned to include on our first mock-up of the redesigned library home page. We wanted to know if the labels we were using would make sense to our end-users, and in the end we used the data to change many labels to terms that might be more easily understood (i.e. course reserves instead of library reserves). We also changed the name of one of our top-level categories, In the Library, to About Us, as a result of the card sorting exercise.

Formal usability testing of the front page was conducted from June to August of 2005, using paper prototypes. Recommendations for change included

1. Streamline the layout - one option per line rather than run-on choices.
2. Reorganize & pare down content
 - a. About Us should be moved to a more prominent position – not buried in bottom right hand corner.
 - b. Ask Us should be present on all pages, but not part of the general site navigation.
 - c. Combine ILL/ISL into one link
3. Revisit link names: especially Digital Reference Shelf, Hawaii Voyager Catalog. Add explanatory text in some way?
4. Library Communities: Change the presentation of this or get rid of it altogether
5. Find a way to easily produce a list of journals we subscribe to.
6. Think about function of site search and what it can/cannot do

(See [Usability Test Plan](#).)

The committee compiled and prioritized a master list of user needs, based upon all of the data collected to date. Included were comments on both the existing website and the first iteration of the redesigned library home page. The nearly 400 comments include likes,

problems, and suggestions, and were manually categorized into different aspects of website functionality, such as navigation, terminology, help/support, etc. The compilation is intended to collocate different chunks of data for easy access and comparative examination, to help provide guidance on priorities for change, and to help track these changes as they occur. Comments compiled on the current library website were from the following sources:

LibQual II survey and focus groups
Town hall meetings
ICS 694 cognitive walkthrough
Web survey
Client survey

Some of these comments have already been addressed in minor changes to the existing website, such as adding explanatory text to confusing terminology, reducing the number of clicks to the hours page, etc.

Comments compiled about the first iteration of the redesigned website were from:

Library wide meetings on the first proto-type
Card sorting exercise
Think aloud 1 exercise

Some of these comments were incorporated into the first pen and paper prototype used in the first think aloud exercise. Other comments are being incorporated into the next iteration of the website redesign currently underway.

(See [Feedback List](#).)

As the Phase I Analysis is complete, the group will now move on to Phase II Project Planning.

Phase I Deliverables

Deliverables for the Analysis Stage consist of the following:

- 1) Project Overview. The document has been reviewed by the Library Web Redesign Committee and posted on the Web.